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Article XXX.— THE TERTIARY TENTHREDINOIDEA OF THE EXPEDITION OF 1908 TO FLORISSANT, COLO.

By S. A. Rohwer.

The saw-flies of the expedition of 1908 to the Florissant Tertiary shales were but seven in number, but they are very interesting. Five of the seven species were new, one of these forming a new genus.

The large *Schizocerus konowi* suggests to the writer a neotropical form, but otherwise the species are very similar to what one would expect in the eastern Atlantic States today. Of the other described ones there is one, *Megaxyela petrefacta* Brues, which resembles closely a *Megaxyela* from Texas. The new genus, *Nortonella*, is probably a mutant from one of the older genera of Tenthredininæ, and would not be characteristic to any region.

Nortonella suggests a possible clue to the origin of that group of Tenthredinoidea which has both recurrent nervures received by the second cubital cell.

With the species described in this paper the fossil saw-flies of Florissant number 30, representing 19 genera. The recent are 31, representing 14 genera.

Schizocerus konowi n. sp.

♀. Length 9.25 mm.; length of anterior wing 6 mm. Head as usual for genus. Middle lobe of mesonotum longer than usual, extending backward much farther than usual, narrowing distinctly posteriorly; the basal half bounded by a broad, rounded ridge, which is crossed transversely by distinct furrows, these furrows are quite close together. Thorax generally rather closely punctured, with medium size punctures. Intercostal cell distinct, broad at apex; stigma large, lower margin quite straight, apex obliquely truncated; basal nervure about half its length basad to origin of cubitus; first recur. received near base of second cub.; second recur. received in basal half of third cub.; third cubital much wider on radial nervure than on cubitus; tran. med. received in middle of first disc.; lanceolate cell very broadly contracted. Lanceolate cell of hind wings shortly petiolate, not as longly so as usual. Color black; abdominal segments 1–4 ferruginous. Basal half of wings hyaline, apical half very dark; venation brown.

Habitat.— Tertiary shales, Florissant, Colo., Station 13B, 1908 (S. A. Rohwer). Type in the University of Colorado.

This species is not related to any described recent one of boreal North America, and is quite different from any modern one known to the writer. The curious sculpture bounding the middle lobe of the mesonotum is very

distinctive. Among the described fossil species from Florissant it is nearest to *Lisconeura vexabilis* Brues, but is quite different from that.

The reverse of the type does not show the curious structure of the thorax as well as the type does.

Named in honor of the late Rev. F. W. Konow.

Eriocampa bruesi n. sp.

Probably a ♂. Length 5 mm., length of anterior wing 4.5 mm. Antennæ short, stout, slightly clavate; joints four, five and six equal. Head and thorax closely rather finely granular or punctured. Posterior tarsi longer than their tibiæ; first joint about equal to 2 + 3 or a little longer. Intercostal vein apparently absent; stigma rounded on lower margin; basal nervure joins cubitus at its base; first recur. in basal half of second cub.; second recurrent a little basad of middle of third cub.; second tran. cub. shorter than the first, and much shorter than the third making the third cubital much wider at the apex; second cubital on radius more than twice the length of first cubital on cubitus; tran. med. in basal third of cell; lanceolate cell with the contraction not as strong as usual; cross-nervure of lanceolate cell decidedly oblique. Color dark brown or black; basal two-thirds of abdomen ferruginous; femora and tibiæ except apex rufous; tarsi infuscated. Wings hyaline; venation brown.

Habitat.— Tertiary shales of Florissant, Colo., Station 13B, 1908 (Melford Smith). Type in the University of Colorado.

In the apparent absence of the intercostal nervure this species differs from *Eriocampa*.

Its size will at once separate it from the other members of the genus, but the following table will make their separation certain:

Second cubital on radial no longer than first cubital on cubitus; (wings hyaline; length 9 mm.) . . . . . *wheeleri* Ckll.
Second cubital on radial more than twice as long as first cubital on cubitus . 1.
1. Length 9 mm.; abdomen black; wings infuscated; cross-nervure of lanceolate cell not decidedly oblique . . . . . *scudderi* Brues.
Length 6 mm.; abdomen at base ferruginous; wings hyaline; cross-nervure of lanceolate cell strongly oblique . . . . . *bruesi* Roh.

Nortonella n. gen.

Habitus much as *Tenthredo* and *Macrophya*. Head large, as wide as thorax, deep. Antennæ 9-jointed, filiform, joint three longer than four. Legs and abdomen absent in type. Intercostal vein absent, stigma large; tran. radial nervure bent, received in about middle of third cubital; four cubital cells; second receiving both recurrent nervures, the first a little basad of middle, the second near the apex of the cell; basal nervure more than half of its length basad of origin of cubitus; lanceolate cell with a short, broad cross-nervure. Hind wing with two discal cells; lanceolate cell petiolate at apex.

Type *Nortonella typica* Roh.

This new genus belongs to *Tenthredininæ* and is probably most closely related to *Macrophya*. It may be known from all its allies by the absence of the intercostal nervure, and second cubital receiving both recurrent nervures.

Nortonella typica n. sp.

Sex ? Length perhaps 10 mm.; length of anterior wing (Fig. 1) about 8.5 mm. Head and thorax closely, finely punctured. Third antennal joint a little longer than fourth; apical joint smaller and shorter than preceding one. Stigma large, rounded

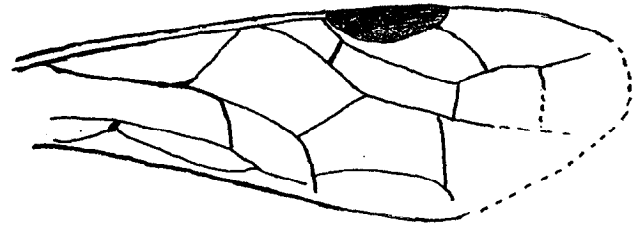

Fig. 1. *Nortonella typica* n. sp. Anterior wing.

on lower margin, drawn out by the transverse radial; tran. med. in basal third of cell; cubitus drawn upward by the first tran. cubitus; radius drawn up by the tran. rad.; basal nervure slightly bent on lower part. Color black. Wings hyaline; venation rather pale brown.

Habitat.— Tertiary shales of Florissant, Colo., Station 13 B, 1908. Collector unknown. Type in the University of Colorado.

Of the fossil species of Florissant, Colo., this one is more closely related to *Macrophya pervetusta* Brues, but it is very different from that.

Dineura cockerelli *Roh.*— A specimen and reverse from Station 13 B in the Tertiary shales of Florissant, Colo., 1908 (Geo. N. Rohwer). Differs in being only 7.5 mm. long and in a few other characters.

Dineura fuscipennis n. sp.

Sex ? Length 8 mm.; length of anterior wing 6.5 mm. In general habitus much like *D. cockerelli* Roh. Head rounded, not as wide as thorax. Third antennal joint somewhat longer than fourth; fourth and fifth equal; antennæ extending back as far as the scutellum at least. Middle lobe of mesonotum bounded by a rather sharp ridge. Intercostal nervure its own length beyond basal; stigma rounded on lower margin; tran. rad. in basal third of third cub.; second recurrent received by second cub. about half the length of the second tran. cubitus from apex; tran. med. received a little beyond middle; basal nervure bent inwardly posteriorly; the venation is

much like *D. cockerelli* but differs in a few marked particulars. Color black; basal two-thirds of abdomen light. Wings strongly infuscated; venation dark brown.

Habitat.— Tertiary shales of Florissant, Colo., Station 13 B, 1908 (S. A. Rohwer). Type in the University of Colorado.

This species is much like *D. cockerelli* Roh., but the infuscated wings and the decided change in position of intercostal nervule will separate it from that species. This is nearer *Dineura* as now defined than any of the other fossil species of Florissant.

The following table will separate the four species known from Lake Florissant.

Tran. med. received between the middle and base of first discoidal cell; (length 7 mm.) . . . . . *saxorum* Ckll.
Tran. med. received at or beyond middle of first discoidal cell . . . . . 1.
1. Robust; second recurrent very close to second tran. cubitus *laminarum* Brues.
Slender; second recurrent quite free from second tran. cubitus . . . . 2.
2. Wings hyaline; intercostal vein more than its own length basad of basal *cockerelli* Roh.
Wings strongly dusky; intercostal vein its own length beyond basal *fuscipennis* Roh.

Atocus defessus *Scudd.*— A specimen from Station 13B of the Florissant shales, 1908 (W. P. Cockerell). This specimen confirms the characters given on p. 524, Bull. Am. Mus. Nat. Hist., Vol. XXIV, 1908. Whether *Atocus* is a good genus or not is a question. I think that it should be reduced to a subgenus of *Pamphilus*.

Tenthredo saxorum n. sp.

Probably a ♂. Length 14 mm.; length of anterior wings 11 mm. Rather slender. Head and thorax rather coarsely granulated. Head developed behind eyes; as wide as thorax. Antennæ as usual, reaching to about middle of scutellum, joints not well differentiated. Venation very similar to modern species. Stigma tapering gently to apex; tran. rad. curved, joining third cub. near apex; third cub. twice as wide at apex as at base; second recur. joining third cub. about the length of second tran. cubitus from base; tran. med. in basal third of cell; cross-nervure of lanceolate cell rather short, bring the cell almost together; lanceolate cell of hind wings normal for genus *Tenthredo, i. e.*, not petiolate at apex. Abdomen long as head and thorax; parallel sided. Head and thorax deep black; basal two-thirds of abdomen ferruginous, apex black. Wings hyaline; venation black.

Habitat.— Station 22 [1] of Tertiary shales, Florissant, Colo., 1908 (S. A. Rohwer.) Type in the University of Colorado.

[1] *Station 22* was established in 1908 on a hillside facing southwest. The hill is southeast of "Fossil Stump Hill," and is where a good deal of the Scudder material came form. The layers worked at station 22 are the same as those worked at Station 17. The expedition is grateful to Mr. Thompson — who in former years collected fossils for Scudder — for showing us Station 22, and other favors.

Of the fossil species of *Tenthredo* this is nearer *T. avia* Brues, than any of the others. It and *T. avia* are the only fossil species which have the lanceolate cell of the hind wings sessile, a character which seems to be constant in the recent species. The other species assigned to the genus *Tenthredo* probably belong to some other of the recent segregates of *Tenthredo*. *T. saxorum* may be easily known from *T. avia* by the different shape of the lanceolate cell and much darker color.

T. saxorum in color is related to *T. occidentalis* Cress., a recent species found at Florissant, but it is much larger than that species, and is more strongly sculptured.

Rohwer, S A, 1908, Bull Amer Mus Nat Hist, 24:530: footnote to description of Dineura cockerelli Rohwer (Hymenop. Tenthred.)

"STATION 13B is between Stations 13 and 14, lower on the slope than 13 (see Ckll. Vol.XXIII 1907, p.131, Bull Am Mus Nat Hist.). Georgraphically it is lower than either 13 or 14, but the layer worked at 13B is the same as that worked at 14. While the layers worked at 13 correspond to 14A (the upper layer of 14 above the heavy sandstone and shale, about 8 feet above) but are much more weathered and break with ease. During the Expedition of 1907 station 14 was extended eastward to meet the excavations made years ago at Station 9. However the central part of 9, where all 1906 and 1907 fossils came from, was not reached."

Rohwer, S.A, 1908, Bull Amer Mus Nat Hist, 24:594: footnote to description of Tenthredo saxorum Rohwer (Hymenop. Tenthred.)

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